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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,425	12/10/2003	Hideo Kawahara	1232-5229	2124

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EXAMINER	
KHAN, USMAN A	
ART UNIT	**PAPER NUMBER**
2622	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/733,425	Applicant(s) KAWAHARA, HIDEO	
	Examiner Usman Khan	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 10 December 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 and 3-8 is/are rejected.

7)☒ Claim(s) 2 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 December 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Vibration compensation apparatus using a conversion table and velocity of two orthogonal directions with associated angles.

Claim Objections

Claim 5 is objected to because of the following informalities: On line 19 of claim 5 the "an photoelectric converter" should be replaced with "a photoelectric converter". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 - 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Morofuji (US patent No. 6,343,188).

Regarding **claim 1,** Morofuji teaches a vibration compensation apparatus (Abstract) comprising: an angular velocity detector that detects a plurality of angular velocities in two orthogonal detection axes directions (figure 1, item 1 for yaw (i.e. x direction) and item 1' for pitch (i.e. y direction)), and outputs corresponding angular velocity signals (figure 1 items 1 and 1' outputting to items 2 and 2' i.e. HPF's); a compensation unit that compensates vibration in a plurality of compensation axis directions (figure 8 and also figure 9 item 106 in directions of item numbers 140 and 117); and a conversion unit that converts the plurality of angular velocity signals obtained by said angular velocity detector or a plurality of vibration compensation signals based on the plurality of angular velocity signals into vibration compensation signals expressed in the coordinates of the compensation axes of said compensation unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal), wherein said compensation unit compensates the vibration based on the vibration correction signals converted by said conversion unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular

displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal).

Regarding **claim 3**, as mentioned above in the discussion of claim 1 Morofuji teaches all of the limitations of the parent claim. Additionally, Morofuji teaches that the said conversion unit has a conversion table storing values to be used in the conversion operation (column 11 lines 32 et seq. and in column 15 liens 33 *et seq.*; data table).

Regarding **claim 4**, as mentioned above in the discussion of claim 1 Morofuji teaches all of the limitations of the parent claim. Additionally, Morofuji teaches that the said compensation unit comprises an optical compensation unit (figure 1 items 30, 30', 5, and 5' incorporating the optical system i.e. optical compensation unit in figure 5; column 7 lines 40 et seq., column 11 lines 12 *et seq.*, column 13 lines 15 *et seq.*, and column 14 lines 66 *et seq.* the VAP i.e. compensation is optically used with other optical components and about the optical axis).

Regarding **claim 5,** Morofuji teaches an image sensing apparatus comprising: a photoelectric converter that senses an image by converting incident light into an electric signal (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16, it is inherent that a CCD photoelectrically converts light into electrical signals and outputs them). The imaging system also comprises a vibration compensation apparatus (Abstract) comprising: an angular velocity detector that detects a plurality of angular velocities in two orthogonal

detection axes directions (figure 1, item 1 for yaw (i.e. x direction) and item 1' for pitch (i.e. y direction)), and outputs corresponding angular velocity signals (figure 1 items 1 and 1' outputting to items 2 and 2' i.e. HPF's); a compensation unit that compensates vibration in a plurality of compensation axis directions (figure 8 and also figure 9 item 106 in directions of item numbers 140 and 117); and a conversion unit that converts the plurality of angular velocity signals obtained by said angular velocity detector or a plurality of vibration compensation signals based on the plurality of angular velocity signals into vibration compensation signals expressed in the coordinates of the compensation axes of said compensation unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal), wherein said compensation unit compensates the vibration based on the vibration correction signals converted by said conversion unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal). Also, said compensation unit compensates vibration by controlling read out timing of the electric signal from said photoelectric converter (it is inherent that the readout of the CCD (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16) i.e.

photoelectric converter is controlled based on the timing and angle of the compensation unit to reduce vibration from the input signals).

Regarding **claim 6,** Morofuji teaches an image sensing apparatus comprising: a photoelectric converter that senses an image by converting incident light into an electric signal (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16, it is inherent that a CCD photoelectrically converts light into electrical signals and outputs them). The imaging system also comprises a vibration compensation apparatus (Abstract) comprising: an angular velocity detector that detects a plurality of angular velocities in two orthogonal detection axes directions (figure 1, item 1 for yaw (i.e. x direction) and item 1' for pitch (i.e. y direction)), and outputs corresponding angular velocity signals (figure 1 items 1 and 1' outputting to items 2 and 2' i.e. HPF's); a compensation unit that compensates vibration in a plurality of compensation axis directions (figure 8 and also figure 9 item 106 in directions of item numbers 140 and 117); and a conversion unit that converts the plurality of angular velocity signals obtained by said angular velocity detector or a plurality of vibration compensation signals based on the plurality of angular velocity signals into vibration compensation signals expressed in the coordinates of the compensation axes of said compensation unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal), wherein said compensation unit

compensates the vibration based on the vibration correction signals converted by said conversion unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal). Also, said compensation unit compensates vibration by processing the electric signal from said photoelectric converter (it is inherent that the readout of the CCD (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16) i.e. photoelectric converter is processed based on compensation unit to reduce vibration from the input signals).

Regarding **claim 7,** Morofuji teaches a vibration compensation method using an angular velocity detector which detects a plurality of angular velocities in two orthogonal detection axes directions (figure 1, item 1 for yaw (i.e. x direction) and item 1' for pitch (i.e. y direction)), and outputs angular velocity signals (figure 1 items 1 and 1' outputting to items 2 and 2' i.e. HPF's), and a compensation unit which compensates vibration in a plurality of compensation axis directions (figure 8 and also figure 9 item 106 in directions of item numbers 140 and 117), comprising: converting the plurality of angular velocity signals obtained by said angular velocity detector or a plurality of vibration compensation signals based on the plurality of angular velocity signals into vibration compensation signals expressed in the coordinates of the compensation axes of the compensation unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the

angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal); and compensating the vibration by controlling the compensation unit based on the converted vibration compensation signals (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal).

Regarding **claim 8,** Morofuji teaches a storage medium, readable by an information processing apparatus (column 27 lines 9 *et seq.*), storing a program including program codes capable of realizing the vibration compensation method (column 27 lines 9 *et seq.*) according to: an image sensing apparatus comprising: a photoelectric converter that senses an image by converting incident light into an electric signal (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16, it is inherent that a CCD photoelectrically converts light into electrical signals and outputs them). The imaging system also comprises a vibration compensation apparatus (Abstract) comprising: an angular velocity detector that detects a plurality of angular velocities in two orthogonal detection axes directions (figure 1, item 1 for yaw (i.e. x direction) and item 1' for pitch (i.e. y direction)), and outputs corresponding angular velocity signals (figure 1 items 1 and 1' outputting to items 2 and 2' i.e. HPF's); a compensation unit that compensates vibration in a plurality of compensation axis directions (figure 8 and also figure 9 item

106 in directions of item numbers 140 and 117); and a conversion unit that converts the plurality of angular velocity signals obtained by said angular velocity detector or a plurality of vibration compensation signals based on the plurality of angular velocity signals into vibration compensation signals expressed in the coordinates of the compensation axes of said compensation unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal), wherein said compensation unit compensates the vibration based on the vibration correction signals converted by said conversion unit (figure 1 items 203 and 203', figure 3, abstract, and column 5 lines 17 *et seq.*; integration unit 203 integrates angular velocity signal and converts the angular velocity signal into an angular displacement signal to generate a vibration signal, a variable angle prism (VAP) also shown in figures 8 and 9 is driven on the basis of the vibration signal). Also, said compensation unit compensates vibration by processing the electric signal from said photoelectric converter (it is inherent that the readout of the CCD (figure 5 item 104 i.e. CCD and column 8 lines 9 – 16) i.e. photoelectric converter is processed based on compensation unit to reduce vibration from the input signals), the program being executable by the information processing apparatus (column 27 lines 9 *et seq.*).

Allowable Subject Matter

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter for **claim 2**: The vibration compensation apparatus according to claim 1, wherein, **let the plurality of angular velocity signals or correction signals be x, y, an angle made by the detection axes of the angular velocity unit and the compensation axes of the compensation unit be .theta., and the converted signals be X and Y, then said conversion unit performs the following operations: X=x cos .theta.-y sin .theta.Y=y cos .theta.+x sin .theta.** is not discussed or suggested in any of the prior art that was searched.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Okada et al. (US patent No. 5,664,243) teaches that the readout of the CCD is controlled according to camera shake.

Hirasawa (US patent No. 5,923,368) teaches vertical and horizontal velocity sensors with angle detection for focus detection.

Inou et al. (US patent No. 5,982,421) teaches vertical and horizontal velocity sensors with angle detection for image shake correction.

Ouchi (US patent No. 5,867,213) teaches vertical and horizontal velocity sensors with angle detection for image shake correction.

Imafuji et al. (US patent No. 5,585,875) teaches vertical and horizontal velocity sensors with angle detection for image shake correction.

Ohishi et al. (US patent No. 5,623,705) teaches vertical and horizontal velocity sensors with angle detection for image blur correction.

Nobuoka (US patent No. 5,986,698) teaches vertical and horizontal velocity sensors with angle detection for image blur correction.

Nobuoka (US patent No. 6,198,504) teaches vertical and horizontal velocity sensors with angle detection for image blur correction.

Ohishi et al. (US patent No. 5,634,145) teaches vertical and horizontal velocity sensors with angle detection for image blur correction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usman Khan whose telephone number is (571) 270-1131. The examiner can normally be reached on Mon-Thru 6:45-4:15; Fri 6:45-3:15 or Alt. Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Usman Khan
03/16/2007
Patent Examiner
Art Unit 2622

DAVID OMETZ
SUPERVISORY PATENT EXAMINER